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Soil contamination and its effects on roselle (*Hibiscus sabdariffa*) growth affected by organic matter, and associated with *Glomus intraradices*

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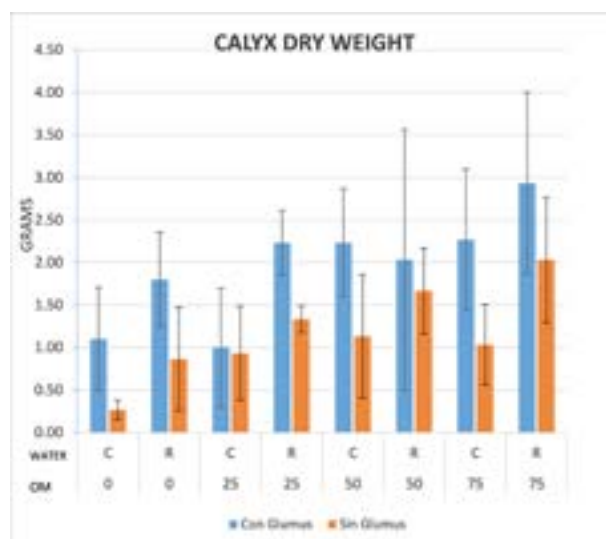
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Statement of the Problem: Roselle (*Hibiscus sabdariffa*) is a tropical crop, member of the Malvaceae family. Its flowers are widely used in Mexico, and other countries in infusions, deserts, and other food items. It is cultivated in small plots with low technology. A sustainable low cost technology is needed to increase the profits of the farmers.

Materials & Methods: The study was done under greenhouse conditions. Two soils were used. One came from a parcel irrigated with sewage water and the other one was irrigated with clean water from a well. Half of the treatments were inoculated with *Glomus intraradices*. Vermicompost was applied as a source of organic matter. Four doses were applied.

Findings: There were significant differences ($p \leq 0.05$) in all the variables recorded due to the treatments. The soil irrigated with contaminated water originated higher plant height and stem diameter, a better shoot and root development, and most importantly an increased fresh and dry weight of the calyx. The plants inoculated with *Glomus intraradices* had better shoot and root growth ($p \leq 0.05$). Vermicompost, as source of organic matter, also had a positive effect on roselle growth. Flower length, shoot fresh weight, and leaf area augmented with the application of higher quantities of organic matter (50 and 75 t ha⁻¹).

Conclusion & Significance: Irrigation with sewage water, inoculation with *Glomus intraradices*, and higher quantities of vermicompost can be used to increase the calix yields on roselle. The use of mycorrhiza can help to overcome the negative effects of contaminated waters, and other environmental and biological stresses. Recommendations are made to validate this result under field conditions.



Biography

Abdul Khalil Gardezi is a distinguished Scientist and academic member of the Hydro Science Center, Postgraduate College in Agriculture Science in Mexico, since 1981. He has received distinctions for teaching, research and service from 1988 until 2016. He has been selected for the originality of his research, presented as the best paper and oral presentation from 2003 to 2016 in international congresses in Australia, Canada, China, Great Britain, Italy, Mexico and USA. He has published more than 190 papers. He has been honored among 2000 outstanding intellectuals of the 21st century by the International Biographical Center Cambridge, England.

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